

Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004 and 2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG)

R3MGRAs Montane and Subalpine Grasslands with Shrubs or Trees

General Information

Contributors (additional contributors may be listed under "Model Evolution and Comments")

Modelers

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Vegetation Type

Grassland

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

- California
- Great Basin
- Great Lakes
- Northeast
- Northern Plains
- N-Cent. Rockies
- Pacific Northwest
- South Central
- Southeast
- S. Appalachians
- Southwest

Dominant Species*

FETH
FEAR2
PEFL1
CHNA

LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

Geographic Range

Northern Arizona, Southern and Northern New Mexico, Southern Colorado

Biophysical Site Description

Elevated plains, terraces along valleys, toeslopes of hills and mountain side slopes ranging from nearly level to very steep topography. Aspect varies, the larger patches are on southern exposures and on summit plains. Elevation ranges from 7500 to 11,800 feet. Moderately deep to deep Typic to Pachic Cryoborolls (FETH) and Argiborolls/Haploborolls (FEAR2). Pachic Udic Argiborolls.

Vegetation Description

Grassland types include Thurber fescue (FETH), Arizona fescue (FEAR2), sheep fescue (FEOV), mountain muhly (MUMO), timber/Parry's oatgrass (DAIN/DAPA, Kentucky bluegrass (POPR), nodding brome (BRAN); tufted hairgrass (DECE), Parry's oatgrass (DAPA2), mountain muhly (MUMO), Idaho fescue (FEID), Agropyron spicatum (AGSP), and Deschampsia cespitosa (DECE). Various sedges (CAREX spp.) will be present in moist (concave) sites.

Shrubs include shrubby cinquefoil (PEFL15), at higher elevations and rubber rabbitbrush (CHNA2) at the lower elevations in the montane zone.

Trees may include ponderosa pine, white fir, Douglas-fir, Engelmann spruce, blue spruce, and subalpine fir.

Disturbance Description

Historical fire frequencies for grassland types are difficult to estimate and some disagreement about the frequency of fire in mountain grasslands exists. Experts that contributed to this model suggested MFIs ranging from 10-300 years, but agree that there is little scientific basis to estimate fire frequencies.

For this model, stand replacement fires were modeled with approximately 70 yr MFI based upon historic

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

photographic analysis, personal communication (Barry Johnston-R2) and inference from fire regimes of adjacent forest types (PIPO 3-12yr, ABCO/PSMEG 14-46yr, PIEN/ABLAA 60-180+yr). Surface fires (only occurring in the class with >15% woody species) occurs with an average MFI of 30 years. Anthropogenic (pre-European, Spanish colonial) fire use ignitions may have been 5-15 years. However, contributors note that estimating return intervals from rephotography or adjacent forests are both incomplete and imperfect methods.

Adjacency or Identification Concerns

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Issues/Problems

Model Evolution and Comments

Peer review disagreed strongly with the current model construct and suggested combining all mountain grassland models (R3MGRA and R3MGRAs) and changing the overall MFI to 100-300 years (for montane and subalpine, respectively) with only replacement fire. The model values were unchanged, but descriptions were modified to incorporate these views.

Quality control found one rule violation (use of disturbance to accelerate age) and when this was eliminated, the frequency of surface fire was reduced from 10 years to 30 years, but had no effect on the resulting percent in each class.

A Mountain Grassland with tree PNVG (R3MGRAwT) created at the Southwest Rapid Assessment workshop was combined with this type.

Succession Classes**
Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 10%

Early1 PostRep

Description

Pioneer species of pine dropseed (BLTR) and thurber fescue (FETH) and Arizona fescue (FEAR2) associations. Some shrubs (shrubby cinquefoil (PEFL15) or rubber rabbitbrush (CHNA2)) present. Low litter cover and high bare soil (>25%)

Dominant Species* and Canopy Position

FETH
FEAR2
CHNA2
PEFL15

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	34 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class B 60%

Mid1 Closed

Description

Closed canopy of thurber and Arizona fescue (FETH and FEAR2) with only minor woody component (<15%). Potentilla fruticosa (POFR4) may be well represented. Bare soil less than 20%.

Dominant Species* and Canopy Position

FETH
FEAR2

PEFL15

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	54 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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Class C 30%

Mid1 Open
Description

Closed canopy of fescue (FETH and FEAR2) with >15% cover of woody species (see species list under vegetation description; many tree species may be present). Bare soil less than 10%. Surface fires can occur in this class, usually eliminating shrubs or tree seedlings and causing a transition to class B.

Dominant Species* and Canopy Position

CHNA2
PEFL15
PIEN
PIPO

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	55 %	100 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class D 0%

Late1 Open
Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	65 %	95 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class E 0%

Late1 Closed
Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	%
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Disturbances

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Disturbances Modeled

- Fire
- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other

Historical Fire Size (acres)

Avg: no data
 Min: no data
 Max: no data

Sources of Fire Regime Data

- Literature
- Local Data
- Expert Estimate

Fire Regime Group: 1

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

Fire Intervals (FI)

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

	<i>Avg FI</i>	<i>Min FI</i>	<i>Max FI</i>	<i>Probability</i>	<i>Percent of All Fires</i>
<i>Replacement</i>	70	10	100	0.01429	30
<i>Mixed</i>					
<i>Surface</i>	30			0.03333	70
<i>All Fires</i>	21			0.04763	

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